EDELBROCK NITROUS SYSTEMS

PERFORMER SPORT COMPACT EFI NITROUS SYSTEM

For Part Numbers 71000, 71004, & 71005

INSTALLATION AND OPERATION INSTRUCTIONS

Edelbrock Corporation
2700 California Street
Torrance, California 90503
Tech Line (800) 416-8628
Tech Fax (310) 972-2730
E-Mail: edelbrock@edelbrock.com

Rev. 5/01

Thank You….
…for purchasing an Edelbrock Nitrous Oxide Injection System.

Nitrous Oxide injection is one of the most exciting performance enhancements, for the dollar invested, on the market today. With the use of nitrous oxide come some important safety considerations. This manual has been written to help you during the installation and use of your Edelbrock Nitrous System. Please read it completely before you install and use your system. Please pay close attention to the safety information at the beginning of each section. The information contained there specifically pertains to each of the components and installation methodologies within the section.

Please take the time to read and understand the following….

By installing your Edelbrock Nitrous System, you indicate you have read this document and you agree with the terms stated below:

It is the responsibility of the purchaser to follow all installation instruction guidelines and safety procedures supplied with the Edelbrock Nitrous Systems. It is also the responsibility of the purchaser to determine the compatibility of the product with the vehicle or the device on which the purchaser intends to install it.

Edelbrock Corporation assumes no responsibility for damages occurring from misuse, abuse, improper installation, improper operation, lack of responsible care, or all previously-stated reasons resulting from incompatibility with other manufacturer's products and/or systems.

Edelbrock Corporation neither recommends nor condones the use of products manufactured or sold by Edelbrock Corporation for use on vehicles, which may be driven on public roads or highways, and assumes no responsibility for damages incurred by such use.

Edelbrock Corporation assumes no responsibility for damages incurred by the use of products manufactured or sold by Edelbrock Corporation on vehicles used for competition or racing.

Edelbrock General Warranty

It is the constant endeavor of Edelbrock Corporation to give our customers the highest quality products obtainable. Edelbrock warrants each new product, except Performer Series Carburetors, Race Division Parts, Tubular Exhaust Systems, RPM Series Mufflers, Cat-Back Systems and Performer IAS Shock Absorbers which are warranted separately, to be free from defects in both workmanship and material for a period of one (1) year from the date of purchase, provided that the product is properly installed, subjected to normal use and service and that the product is not modified or changed in any way, negligence by customer or installer or used for racing or competition purposes.

Our warranty service and repair facility is located at 2700 California Street, Torrance, California 90503. Customers who believe they have a defective product should either return it to the dealer from which it was purchased or ship it directly to Edelbrock along with proof of purchase and a complete description of the problem. The product must be returned freight pre-paid. If a thorough inspection of the product by the factory indicates defects in workmanship or material, our sole obligation shall be to repair or replace the product. Warranty covers only the product itself and not the cost of installation or removal.

Edelbrock Corporation shall not be liable for any and all consequential damages occasioned by the breach of any written or implied warranty pertaining to this sale in excess of the purchase price of the product sold.

If you have any questions regarding a product or installation, please contact our Technical Department, toll free at 1-800-416-8628 from 7:00am to 5:00pm PST, Monday through Friday.

Thank you again for choosing Edelbrock Nitrous Systems.

EDELBROCK NITROUS SYSTEMS
PERFORMER SPORT COMPACT EFI SERIES NITROUS SYSTEM

Table of Contents

Page #

a. Before You Install Your Edelbrock Nitrous System 2
b. What is Nitrous Oxide? 3
c. Safety Tips for Working with Nitrous Oxide 3

1.0 Introduction to the Edelbrock Nitrous Systems Kit

1.1 General Information 4
1.2 Jet Map Information 5
1.3 Engine Operation Considerations 5
1.4 Performer Sport Compact EFI Series Nitrous System Bill of Materials 6

2.0 Performer EFI Series Nitrous System Installation

2.1 Nitrous Bottle Mounting 7
2.2 Nitrous Bottle Mounting Instructions 8
2.3 Nitrous Bottle Orientation 8
2.4 Nitrous Bottle Installation 9
2.5 Nitrous Feed Line Mounting 10
2.6 Solenoid Mounting 10
2.7 Nitrous Spray Nozzle Installation 11
2.8 EFI Vacuum “Tee” Installation 12
2.9 Fuel Pressure Safety Switch Installation 12

3.0 Electrical System Installation

3.1 Electrical Components Bill of Materials (BOM) 13
3.2 Nomenclature Descriptions 13
3.3 Electrical System Wiring Diagram 14
3.4 Electrical System Installation Procedures 15
3.5 Relay and Fuse Holder Installation 15
3.6 Arming Switch and Installation 16
3.7 Microswitch Installation and Wiring 16-17
3.8 Final Electrical Installation Recommendations 17

4.0 Before You Run Your Edelbrock Nitrous System

4.1 Fuel System Check 18
4.2 Nitrous System Check 18

5.0 Troubleshooting and Routine Maintenance 19-21

Caution!!

Before You Install Your Edelbrock Nitrous System…

Please read this Installation manual fully before installing this system.

You will need to have available the following tools:

Hand Tools

- Socket set including ratchets and extensions
- Screwdrivers
- Pliers
- Bench vise
- Wire crimping pliers, wire strippers
- Floor jack
- Vehicle jack stands
- Safety glasses

Power Tools

- Power drill
- Drill bits (1/4”, 1/2” and 3/8”)

You should understand the following skills:

- Power tool safety procedures
- Undercar safety procedures
- Proper measuring techniques
- Proper electrical assembly techniques
- Basic engine operation and tuning

☎	Anytime you have questions or concerns with your Edelbrock Nitrous System, please call our technical support hotline at 1-800-416-8628 before you start your engine.

WHAT IS NITROUS OXIDE?

Nitrous Oxide is a cryogenic gas composed of nitrogen and oxygen molecules. It is stored as a "gas over a liquid" which means that both liquid and gaseous nitrous oxide is delivered into your engine. It is 36% oxygen by weight, which is what produces the added horsepower. By injecting more oxygen (and a corresponding fuel signal), we create the additional power the same way a supercharger or a turbocharger does.

Nitrous Oxide is considered an "oxidizer" and not a fuel. Therefore, nitrous oxide is non-flammable by itself. Because nitrous oxide is a cryogenic, the same safety methods in handling dry ice apply to nitrous. Direct contact with the skin will cause a burn similar to contact with dry ice. The exception in using nitrous oxide comes from increased breathing hazards associated with the gaseous properties of nitrous oxide.

Nitrous Oxide is offered for sale in two common grades, which are U.S.P., and *Nytrous Plus*. U.S.P. nitrous oxide is medical grade nitrous oxide. Its common use is dental and veterinary anesthesia as well as use as a propellant in food such as canned whip cream. U.S.P. is not available to the public and would provide no advantage in the making of horsepower over the automotive grade nitrous oxide.

Nytrous Plus was specifically designed for automotive consumption and differs from U.S.P. in that it contains trace amounts of sulfur dioxide (100 parts per million or "PPM") added to prevent substance abuse. The Sulfur Dioxide is an irritant to all of your breathing passageways and will create sore throats and sore nasal passages. *Nytrous Plus* was specifically created for automotive applications and is available for sale to the public at many speed shops across the USA.

☑ Safety Steps For Working With Nitrous Oxide

1. ***Never*** inhale *Nytrous Plus* (Nitrous oxide (N_2O) for vehicular use) as continued exposure can cause death. *Nytrous Plus* has a maximum of 100 parts per million (ppm) of sulfur dioxide and will cause irritation to nose and throat passageways.
2. When working around any high-pressure gas including nitrous oxide, take all precautions to ensure that exposure to nitrous oxide is minimized.
3. ***Do not*** vent nitrous oxide to atmosphere in confined spaces. Only vent nitrous oxide in well-ventilated and open areas.
4. Liquid nitrous oxide can cause burns to human flesh so protect all skin in and around your hands, arms and face. Wear safety glasses and rubber gloves to protect from liquid nitrous oxide splatter.
5. When venting down the nitrous system, vent the line down closest to the nitrous bottle.
6. ***Do not*** use any form of Teflon tape as sealant on fitting connections. Use only Teflon paste.
7. When washing components, ensure the clean components are completely dry, free of oils, and solvents. Failure to remove all liquids could cause component or system failure.
8. Always turn the bottle off before making any repairs to the nitrous delivery system.
9. To safely release nitrous oxide in a pressurized line;
    a. Position vehicle in a well-ventilated, unconfined space.
    b. Turn bottle off.
    c. Slowly turn the nitrous feed line at the bottle open until you hear a light hissing noise.
    d. Allow the entire nitrous pressure to vent from the line.
    e. Perform your work on the system.
    f. Re-attach the nitrous line to the bottle.
    g. Slowly open the nitrous bottle valve, listening for leaks.
    h. Perform leak checks on all affected fittings and the bottle fitting.

☎	Anytime you have questions or concerns with your Edelbrock Nitrous System, please call our technical support hotline at 1-800-416-8628 before you start your engine.

1.0 Introduction to your Edelbrock Performer Sport Compact EFI Nitrous System

....*about this manual!*

Within the pages of this manual is information, safety tips and operation instructions for your new Edelbrock Nitrous System. Watch for these symbols to know where to go for information.

☑ **....There is safety related information here.**

....shows where technical information about your vehicle or specific skills that may help during installation.

....call Edelbrock Technical support hotline for more information.

1.1 General Information

The Edelbrock Performer Sport Compact EFI Nitrous Systems (Part Numbers 71000, 71004, & 71005) are designed for any import vehicle with stock or slightly modified engines utilizing a return style fuel system. Horsepower and torque increases can vary with equipment upgrades and modifications.

This system utilizes a single nozzle that is installed in the intake pipe between the air filter and the throttle body. The additional fuel needed with nitrous is supplied by the vehicle's standard fuel system.

This system has been designed with some flexibility as to where certain components can be located to allow easy installation on vehicles with upgraded or modified equipment. The solenoid and microswitch brackets are designed to be manipulated (bent, cut, twisted, etc.) and the electrical components have properly-sized and ample lengths of wire.

This system includes the bottle (shipped empty), bottle feed line and universal footprint steel bottle brackets. The mounting brackets also include rubber insulators to protect the surface of your nitrous bottle while mounted in the brackets. When installing your nitrous bottle, pay close attention to the installation instructions for the location of your bottle. Ensure the installation of your bottle does not compromise any systems that may lie under the potential location where you plan to drill holes for mounting the brackets.

Call your local automotive store, motorcycle shop or race track for refilling of your bottle. Trust a professional to properly fill your bottle and reference your installation manual when re-installing your filled bottle back into your vehicle.

Always take care when handling a full bottle of nitrous oxide. Please reference this manual for further safety measures to take during the handling of a nitrous oxide bottle.

Please follow all safety methods during the installation of your Edelbrock Nitrous System, and follow all vehicle regulations and road laws when using your nitrous system.

1.2 Jet Map Information

Edelbrock engineering has conducted dyno testing with the Edelbrock Performer Sport Compact EFI Nitrous System to ensure the horsepower increase of the nitrous system is as intended. On a typically stock 1.6L engine, you can expect the following approximate power gain:

Nitrous/Fuel Jetting		Approx. HP Gains	Final Air/Fuel Ratio
32	**42**	**50**	**11.5/1**
34	**42**	**60**	**12.0/1**
36	**42**	**70**	**12.8/1**

The dyno tests were conducted at Edelbrock using a stock 1.6L engine. These tests were conducted with 950 psi nitrous bottle pressure.

1.3 Engine Operation Considerations

When used correctly, nitrous oxide safely elevates cylinder pressures and temperatures while increasing combustion rate. These characteristics make the engine more sensitive to detonation. To ensure proper performance, engine and drive line life, the following tips are suggested:

- **System Jetting**

Never exceed the recommended jetting!! Excessive jetting could result in severe engine damage.

- **Fuel Quality**

Because Nitrous oxide is an oxidizer, fuel selection is critical. Both octane and fuel consistency affect fuel burn rate. The oxidizer quality of nitrous oxide will accelerate the burn rate, so we recommend a high quality of gasoline. We also recommend you use the same grade of gasoline every time you use your nitrous oxide system. This will help maintain the same fuel burn rate every time.

- **Ignition Components**

Most aftermarket performance chips increase the vehicle's ignition timing, which can cause detonation with the use of nitrous oxide. Please consult with your chip manufacturer on information regarding the compatibility of your chip with nitrous oxide use.

If your vehicle is equipped with platinum-type spark plugs, we highly recommend they be removed and replaced with the equivalent standard-type spark plugs.

- **Engine System Upgrades**

With all performance modifications, complementary system upgrades will always serve to elevate the consistency and longevity of an engine, especially when using nitrous oxide as a power adder. Modifications such as ignition upgrades, free-flowing exhaust, camshafts, cylinder heads, manifolds, fuel controls and fuel pumps can all add to the performance of a nitrous oxide injected engine.

1.4 Performer Kit Bill of Materials

Item #	Qty.	Description
		Nozzle and nozzle hardware
1	1	Nitrous Fan spray nozzle
2	1	Nitrous Fan spray nozzle bulkhead body bolt
3	1	Nitrous Fan spray nozzle bulkhead concave nut
		Solenoids and solenoid hardware
4	2	Performer Nitrous solenoid
5	1	Solenoid tee 1/8 NPT male x 1/8 NPT female x 1/8 NPT male
6	1	EFI solenoid mounting bracket
7	4	Solenoid mounting screws (8 x 32 UNC x 5/16”)
8	1	Nitrous filter, 4AN x 1/8 NPT, straight fitting, blue
9	1	3AN x 1/8 NPT straight fitting, blue
10	1	90º swivel adapter, 4AN male x 4AN female
11	1	2 ft. 3AN steel braided hose
		Nitrous Pressure Regulator and Hardware
12	1	Nitrous pressure regulator assembly
13	1	1/8 NPT male x 1/8 NPT male union, brass
14	1	EFI vacuum tee assembly
15	1	1/8 NPT x 3/16” barb, hose adapter fitting
16	1	2 ft. x 3/16” rubber fuel hose
17	5	Ratchet hose clamps, 3/16”
		Fuel Pressure Safety Switch and Hardware
18	1	Fuel pressure safety switch
19	1	1/16 NPT tap
20	1	1/16 male x 1/8 female brass adapter
		Bottle and Bottle Hardware
21	1	10-lb. Nitrous bottle
22	1	Nitrous bottle bracket set (1 tall, 1 short)
23	2	Rubber insulators (for brackets)
24	1	4AN x 660 Bottle nut and washer
25	2	Bolts, bottle bracket 5/16” x 18 x 1-1/2”
26	2	Nuts, bottle bracket 5/16” x 18
27	1	4AN x 14 ft. main feed line
		Jets
28	1	Jet #32
29	1	Jet #42
		Electrical System Components
30	1	Electrical Component Package (see page 13 for BOM)

2.0 Performer System Installations

2.1 Nitrous Bottle Mounting

The nitrous oxide storage cylinder is typically called a “nitrous bottle”. It is an aluminum cylinder, designed and manufactured to withstand very high pressures. The valve on top of the bottle is a high-flow design that allows easy opening and closing which controls the nitrous flow to the engine compartment.

Accurate calibration of your nitrous system depends on the bottle remaining at a stable temperature. In vehicles (such as Corvettes) where the bottle must be mounted in an area subject to direct sunlight, it is suggested that the bottle be shielded with a bottle blanket.

If the bottle is mounted inside the passenger compartment or in a space that has access to the passenger compartment such as hatchbacks or vehicles that feature fold down rear seats, the pressure relief device (PRD valve) must be vented externally from the cockpit. This procedure will prevent the passenger compartment from filling with a cloud of nitrous oxide, should the safety pressure relief valve rupture.

Special consideration should be made to protect the bottle installation by not placing the bottle in a known crumple or crash zone within the vehicle. At no time should the bottle be mounted within the seating area of the passenger compartment of a street-driven vehicle.

Performer Bottle Valve

660 High Flow Nitrous Exit

Pressure Relief Device (PRD)

Here is the Performer Bottle Valve. A Pressure Relief Device or “PRD” is installed on all bottle valves used in Edelbrock Nitrous Systems. It is a safety valve designed to vent the contents of the bottle to the atmosphere in case if the bottle pressure exceeds the safe limit.

Over-pressurization can result from over-filling, exposure to direct sunlight or high temperatures, or a violent strike to the bottle surface.

It is illegal to tamper with or remove this device.

☑ Bottle Safety Information

1. ***Do not*** *attempt to remove the bottle valve. Please return your bottle to Edelbrock if service is required to the siphon tube inside the bottle or the bottle valve itself.*
2. ***Never*** *heat the outside of your nitrous bottle with an open flame like that of a torch.*
3. ***Do not*** *strike the surface of your nitrous bottle with a heavy or sharp object.*
4. ***Do not*** *drop your nitrous bottle.*
5. ***Do not*** *attempt to grind off or destroy any imprinted markings on the face of the bottle.*
6. ***Do not*** *remove, modify or otherwise tamper with the safety valve on the bottle valve.*

Racing Vehicles

Before you use the Edelbrock bottle mounting brackets to mount a nitrous bottle in a vehicle intended for use in racing or sanctioned events, check with the sanctioning association or local racetrack for any rules regarding bottle installation. Most associations require the bottle be mounted within the confines of the safety roll cage, with the safety pressure relief cap vented away from the driver’s compartment.

2.2 Bottle Mounting Instructions

Accurate calibration of your nitrous system depends on the bottle remaining at a stable temperature. Choosing the proper location and orientation for your bottle can greatly affect the overall operation of the nitrous system. Please read the entire bottle mounting instruction section before making your final bottle location decisions.

2.3 Bottle Orientation

Bottle placement is critical to the performance of your nitrous system. It is important to understand how the bottle valve and siphon tube are assembled to properly orient the bottle in your vehicle and ensure that it picks up liquid nitrous while undergoing acceleration. All nitrous bottles are assembled so that the bottom of the siphon tube is at the bottom of the bottle, opposite the bottle label.

An Edelbrock nitrous bottle cannot be mounted upside-down. Edelbrock does not offer a non-siphon tube bottle for automotive use. If the bottle must be mounted parallel to the axles of the vehicle (sideways), the valve handle and label must be angled at approximately 45 degrees toward the front of the vehicle. This orientation will position the siphon tube toward the rear and pointing to the lower rear-facing quadrant of the bottle. All of this positioning information is critical to system operation. It is most important to draw as much liquid nitrous as possible. The siphon tube cannot do this unless the bottle is positioned correctly.

The most efficient mounting is the lay-down position with the valve handle toward the front of the vehicle. This position allows the greatest amount of liquid to be used before the siphon tube begins to pick up gaseous nitrous oxide.

2.4 Nitrous Bottle Installation

After you have determined the location and orientation of the nitrous bottle, use the following procedure to install the bottle:

2.4.1 Street Car Installations

1. Disconnect vehicle's battery.
2. Determine the location of the bottle within the confines of the rear of the vehicle.
3. Once a mounting location has been determined, raise the vehicle (following all safety practices involved in working on a vehicle from under the vehicle) and verify that there are no fuel lines, fuel tank(s), brake lines, emissions equipment, or structural members in the way of potential mounting bolt locations.

   Note: It may be necessary to remove the fuel tank depending on the location you wish to install the bottle.

4. Using the mounting bracket bolt holes as templates, mark an area for each of the two (2) brackets with chalk, metal marking pen, scribe, or marking pen to locate the bolt placements for drilling.
5. Drill two (2) 3/8" mounting holes for each bracket.
6. Install the bottle mounting brackets using "Grade 8" bolts, nuts and flat washers (not included with kit).
7. Tighten the mounting bolts using a thread locking chemical (not included with kit).
8. Install the rubber insulators within the bottle brackets.
9. Slip bottle into the mounting brackets.
10. Tighten bracket clamps as shown in the picture.

Shown here is a bottle with a bottle bracket properly installed with the rubber insulator. The distance between the bottle brackets is somewhat adjustable. Remember, mount the short bottle bracket at least 1" from the bottom of the bracket, and never cover any of the bottle label with a bottle bracket.

Do not attempt to install the bottle in the bracket without the rubber insulator. The bottle hoop on the bracket is dimensioned to include the thickness of the insulator.

2.4.2 Race Car Nitrous Bottle Installations

Install the bottle brackets in accordance to race track and/or sanctioning body rules. Contact the factory for assistance with meeting sanctioning body rules.

2.4.3 Nitrous Bottle Installations For Vehicles With Hatchbacks Or Trunk Areas That Are Connected With The Passenger Compartment.

Please contact Edelbrock for more information.

2.5 Nitrous Feed Line Mounting

1. Determine the route your main nitrous feed line will follow. Ensure the path does not route the nitrous feed line too close to the exhaust system, suspension, electrical lines/components and tires.
2. Attach nitrous supply line to bottle.
3. Feed nitrous line along proposed route.
4. Secure nitrous supply line to underside of vehicle.
   - ☑ ***Note:*** Stainless steel covering of the main nitrous feed line is very abrasive. Shield painted components or sensitive system components like electrical, fuel lines, brake lines or suspension components to prevent them from contacting main feed line. Rubber hose can be slid over and retained as a chafe guard.
5. Leave nitrous line loose pending installation of nitrous solenoid.

2.6 Solenoid Mounting

Use the following procedures to install the Performer nitrous solenoids:

Note: Remember to <u>use Teflon paste only</u> on pipe threads. <u>*Do not* use *Teflon tape*</u>.

Hint: Placement of the solenoid is often limited by the lack of possible mounting locations in the engine compartment. However, if possible, observe the following suggestions:

☑ Solenoid Safety Information

1. Keep solenoid and lines away from exhaust components.
2. Trial fit the solenoids with all lines attached to ensure a proper fit.
3. Solenoids may be mounted sideways or upside-down, if necessary.

2.6.1 Preparing To Mount Your Solenoids

1. Locate the EFI solenoid bracket, solenoid “tee”, and solenoid mounting screws.
2. This solenoid bracket can be modified (bent, twisted and/or cut) to allow for easier installation in areas with minimal clearance . Please look at the photo on the next page of a typical solenoid mounting location, and adapt your bracket according to the needs of your particular application.

2.6.2 Nitrous Solenoids and Nitrous Pressure Regulator Mounting

1. Hold one of the nitrous solenoids securely (like in a bench vise) being careful not to harm the solenoid or block the inlet or outlet of the solenoid.
2. Install nitrous filter fitting (Blue fitting 4AN X 1/8 NPT) using liquid Teflon, in the inlet port of the nitrous solenoid.
3. Install one of the 1/8 NPT male sides of solenoid “tee”, using liquid Teflon, on the outlet port of the nitrous solenoid. The female port of solenoid “tee” should be facing outward.
4. Install the remaining 1/8 NPT male end of the solenoid “tee”, using liquid Teflon, into the inlet port of the second nitrous solenoid. Rotate second solenoid so that it parallels the first.
5. Install the 3AN x 1/8 NPT (blue straight fitting) into the outlet port of second nitrous solenoid.

6. Install one end of the 1/8 NPT male x 1/8 NPT male nipple fitting, using liquid Teflon, into nitrous pressure regulator inlet port.
7. Loosely thread nitrous pressure regulator/nipple assembly into 1/8 NPT female port on solenoid “tee”.
8. Using liquid Teflon, install 1/8 NPT x 3/16” barb fitting into nitrous pressure regulator.
   i. Remove nitrous solenoid/regulator assembly from vise.
   ii. Attach EFI solenoid bracket to the bottom of the solenoids.
   ii. Verify the desired mounting location for the solenoid/regulator assembly.
9. Install solenoid/regulator assembly in desired location.
10. Tighten nitrous regulator until barb fitting points towards the vehicle’s fuel pressure regulator.
11. Leave all wiring loose for electrical systems installation.
12. Connect main nitrous feed line to inlet fitting (4AN x 1/8 NPT nitrous filter fitting) of the first nitrous solenoid.

Here is a typical EFI solenoid/regulator assembly (regulator not installed), mounted in the engine compartment of a vehicle, using a non-modified EFI solenoid bracket. Modifications performed to a solenoid bracket depend on many factors. When mounting the solenoid/regulator assembly on the vehicle, considerations should be taken regarding any potential interference with the vehicle’s systems or components.

The line length between the Performer EFI solenoid/regulator assembly and the jet fitting on the nitrous spray nozzle is 24 inches. This should also be considered when mounting the solenoid/regulator assembly.

2.7 Nitrous Spray Nozzle Installation

1. Determine nozzle mounting location in air inlet pipe, between air filter and throttle body, making sure the nozzle, mounting collar, and the feed line from solenoid to nozzle, do not interfere with any systems or components of the vehicle.
2. Remove air inlet pipe.
3. Drill a 7/16” hole in inlet pipe where nozzle placement has been determined.
4. Install nozzle mounting nut and collar onto inlet pipe.
5. Install inlet pipe.
6. Mark the spray direction on the nozzle.

7. Using liquid Teflon, install the spray nozzle into the air inlet pipe making sure the nozzle discharge is toward the vehicle’s engine.
8. Install recommended jet into nozzle fitting.
9. Install 3AN line from solenoid outlet fitting to spray nozzle jet fitting and tighten securely.

2.8 EFI Vacuum “Tee” Installation

1. Install the recommended jet (page 5) into the EFI Vacuum “Tee” and tighten fitting securely.
2. Remove vacuum line from the vehicle’s fuel pressure regulator.
3. Install vacuum line from the vehicle’s fuel pressure regulator onto the center barb fitting of the EFI Vacuum “Tee”.
   Note: *The center barb can easily be identified by the anodized nut used to hold the Pressure Relief Jet.*
4. Measure the correct length of vacuum line from the barb on the Fuel Pressure Regulator to one port of the EFI Vacuum “Tee”. Cut vacuum line and install.
5. Measure the correct length of vacuum line from the barb fitting of the nitrous pressure regulator to the remaining open port on the EFI Vacuum “Tee”. Cut vacuum line and install.

2.9 Fuel Pressure Safety Switch Installation

1. Locate fuel rail test port fitting.
2. Make sure the vehicle’s engine is cool, release pressure in fuel system by pressing down on valve in center of the fitting. This will allow the pressure to escape as well as some fuel.
3. After relieving all pressure, remove test port fitting core and install the 1/16 NPT male x 1/8 NPT female brass fitting in its place, using liquid Teflon.
4. Using liquid Teflon, install Fuel Pressure Safety Switch into 1/16 NPT male x 1/8 NPT female brass adapter.

Note: On some vehicles, there is no test port fitting, or the location of the test port fitting does not allow ample room for the fuel pressure safety switch to be mounted. These applications (as shown in the photo) will require the “Banjo nut” at the fuel filter to be drilled and tapped (1/16 NPT tap supplied with system) to allow mounting of the fuel pressure safety switch.

3.0 Electrical System Installation

3.1 Electrical Components Bill of Materials (BOM)

Item	Quantity	Description
1	1 ea.	Activation microswitch
2	1 ea.	Activation microswitch bracket (not shown)
3	2 ea.	Activation microswitch mounting nut
4	2 ea.	Activation microswitch mounting screw
5	1 ea.	30 amp relay
6	1 ea.	Wire harness with integral relay/fuse holder
7	1 ea.	Red lighted toggle switch
8	2 ea.	18/22g female spade connector, Nylon insulated
9	2 ea.	14/16g female spade connector, Nylon insulated
10	1 ea.	14/16g male spade connector, Nylon insulated
11	1 ea.	16/18, splice connector
12	1 ea.	14/16g 3/8” ring terminal, Nylon insulated
13	3 ea.	18/22g ring terminal #10 Stud, Nylon insulated
14	2 ea.	18/22g ring terminal #8 Stud, Nylon insulated (.187)
15	2 ea.	18/22g female spade connector, Nylon insulated
16	1 ea.	15 amp ATO blade fuse

3.2 Nomenclature Descriptions:

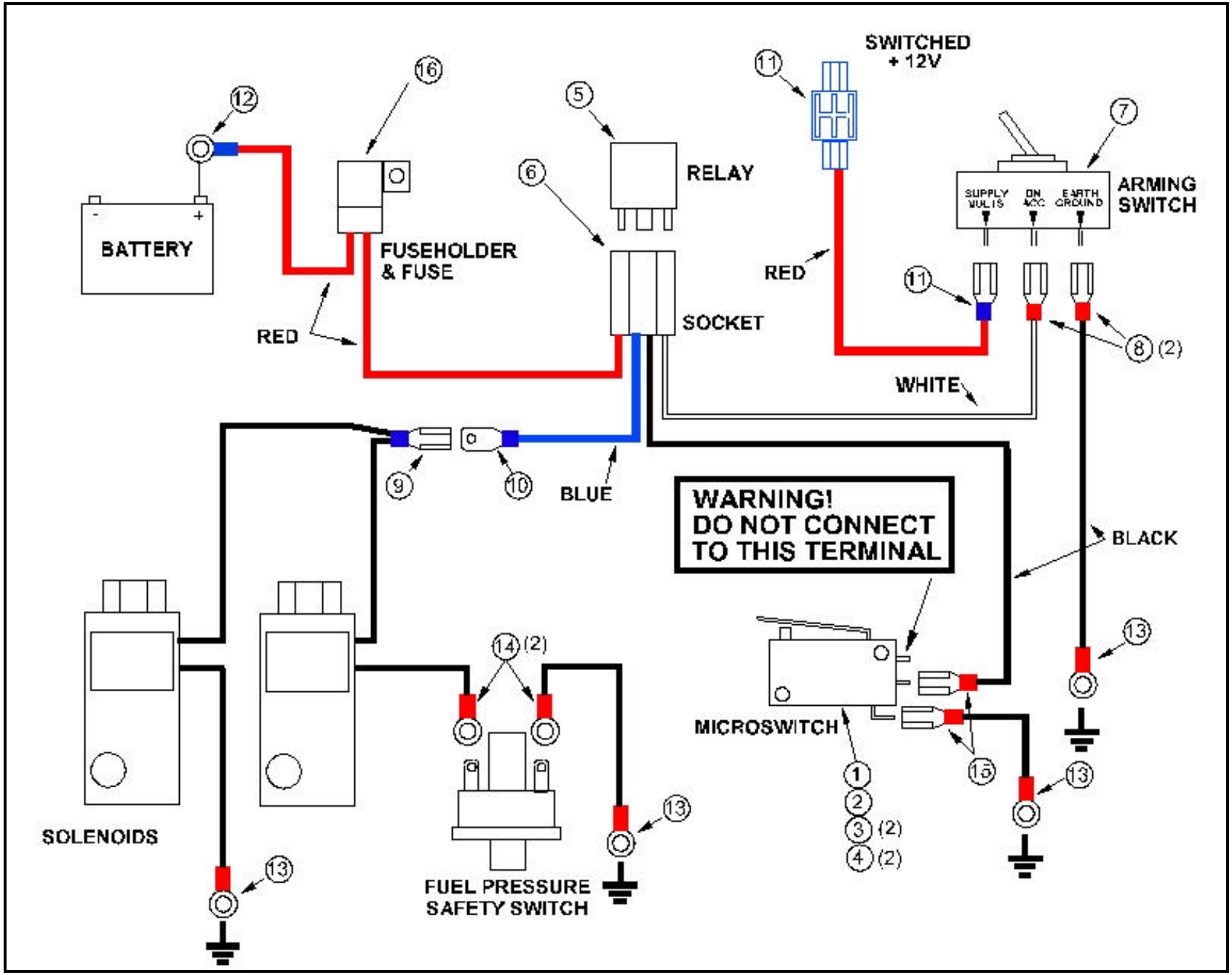
ATO… *the fuse configuration is ATO. When replacing this fuse, ask for an ATO fuse.*

“a”… *Amperage.*

Important: The wiring hardware and instructions included with this kit are intended for 12-volt electrical systems only. Before attempting to wire your Edelbrock Performer nitrous oxide system, examine and follow the wiring diagram on the following page. Please call the Edelbrock technical department with any questions concerning electrical wiring.

	When working with electrical systems in your vehicle, it is a good idea to have a service manual that features your vehicle. It is also good practice to have a book that specializes in the techniques required when working with vehicular electrical systems.

3.3 Electrical System Wiring Diagram



3.4 Electrical System Installation Procedures

Determine the location of the Relay and Fuse Holder wire harness. Most common installations locate these components inside the driver's compartment and close to the fuse panel under the dash. You can also mount the Relay and Fuse Holder and harness close to the battery. However, these connectors are water-resistant not waterproof, so care is required when mounting this assembly under the hood of your vehicle.

Wire Schematic Origin and Destination Map

Wire Color	System	Origin	Destination	Terminal Used
Red	Main System Bat. Voltage	Relay Harness	Bat. Volt. Signal	Ring
Red	Arming Switch	Arming Switch	Underdash Switched 12V	Spade/Wire Intercept
Blue	Solenoid Power	Relay Harness	Solenoids #1 & #2	Spade
White	Relay Power	Relay Harness	Arming Switch	Spade
Black	Arming Switch Grnd	Arming Switch	Chassis Grnd	Spade/Ring
Black	Relay Grnd	Relay Harness	Microswitch	Spade
Black	Microswitch Grnd	Microswitch	Chassis Grnd	Spade/Ring
Black	Solenoid #1 Grnd	Solenoid #1	Chassis Grnd	Ring
Black	Solenoid #2 Grnd	Solenoid #2	Fuel Pressure Safety Switch	Ring
Black	Fuel Pressure Safety Switch Grnd	Fuel Pressure Safety Switch	Chassis Grnd	Ring/Ring

3.5 Relay and Fuse Holder Installation

The wire harness attached to the relay and fuse holder includes 8 feet of color-coded wires to make the electrical system installation for your Edelbrock Nitrous System as easy as possible. We recommend that you **do not** cut any lengths of wires from the wire harness or complete the wiring of the nitrous system until all of the mechanical components are securely mounted in their permanent locations.

Once all of the solenoids and switches are placed, then route the un-cut wires from the harness to each location allowing enough wire length on each circuit to not interfere with operating linkages, heat sources, brackets, etc. Pay particular attention to sharp edges along the route of your wire harness as they can chafe the wire and cause your system to fail.

After you have accounted for the routing of your wires, follow the Wire Harness Schematic on page 14 and use the Origin and Destination Map as a guide for which electrical connectors are used in each circuit.

Once you have decided the location of the relay and fuse holder, secure them with fasteners (not included with kit) such as sheet metal screws, bolts and nuts, etc. Allow for some slack in the red wire that connects the relay and fuse holders together.

When mounting your relay and fuse holder, make sure the mounting surface is strong enough to support servicing the relay and fuse easy. Also, ensure you allow for some slack in the wire that joins the fuse holder to the relay mount. This will avoid any potential loss of power due to stress on the wire harness.

The fuse is covered by the fuse mount housing.

The relay for the Performer system is **30 amps**, and the fuse is **15 amps**.

3.6 Arming Switch and Installation

The arming switch is a red, lighted switch that is a “MASTER” arming switch for your nitrous system. Without it, your nitrous system would be “on” all of the time and capable of engaging anytime you go to wide-open throttle conditions with your vehicle. The switch, when in the “armed” position, is well lit. Therefore, it should be placed in an obvious position well within the line of sight and easy reach of the driver. Please refer to the procedures below for the installation of the arming switch:

1. Locate the final position of your arming switch.
2. Drill a 1/2” hole for the switch location.
3. Insert the switch from behind the mounting hole and secure with the switch nut.
4. **Do not** wire until all other mechanical components are in place. Please see the electrical system installation instructions for further information.

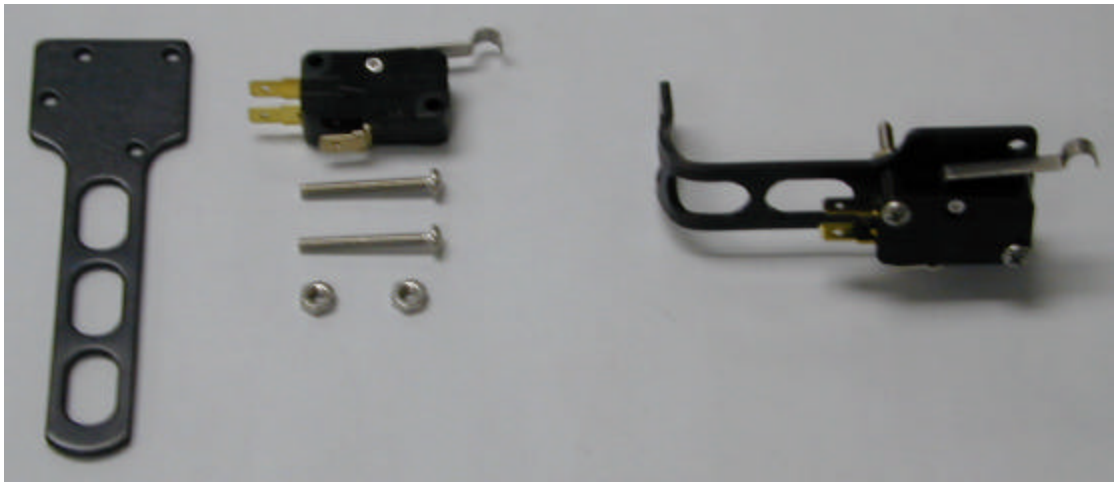
   Note: There is a collar included with the switch for applications that require special spacing during installation.

3.7 Microswitch Installation and Wiring

The function of your microswitch is to enable your nitrous system. It should be installed so that the switch is forced closed by coming in contact with the throttle linkage only at the wide open throttle position. The nitrous system must only function at fully-loaded wide-open throttle.

☑ *MICROSWITCH SAFETY INFORMATION*

1. **Do not** allow wiring from the microswitch to come in contact with heat sources on the intake manifold such as EGR risers or passageways.
2. **Do not** run wires to the microswitch that can create interference with the operation of the throttle linkage.
3. The microswitch must be located in such a way as to be clear of the normal operation of the throttle linkage.
4. **Do not** directly expose the microswitch to liquids such as water or gasoline.



This is a picture of an unmodified and a “ready to install” microswitch assembly. The microswitch bracket has several mounting positions available for clocking of the switch. It also is of a universal length and can be attached to several positions on and around the throttle body.

3.7 Microswitch Installation and Wiring (Continued)

The bolts used to attach the microswitch have extra length to allow for spacing the microswitch away from the bracket if necessary. After determining the position of the microswitch, we recommend trimming the bolts for a clean installation.

Due to the wide variety of throttle linkage combinations in use, it is impossible to supply a microswitch bracket custom-tailored to each application. The universal bracket-supplied will need to be modified to fit your specific application.

Here is the microswitch assembly mounted for use with an Edelbrock Throttle body (#3843). It is an example of one of many ways in which to mount a microswitch on your manifold. The microswitch bracket allows for many different mounting positions. The microswitch bracket can be modified to clear almost any potential interference around the throttle linkage.

Please look for potential microswitch mounting locations and adapt your microswitch bracket according to the needs of your particular application.

The microswitch bracket is drilled to allow many different switch mounting positions. This flexibility allows the microswitch to be positioned in such a manner that it will engage the throttle linkage without interfering with its normal and safe operation. The bracket may be manipulated (bent, twisted, and/or cut) to best suit your combination. Mount the microswitch so the actuation arm is triggered by throttle linkage making sure all wiring and the bracket do not interfere with the smooth and safe operation of the throttle linkage.

Adjust microswitch to ensure the actuation arm “clicks” at the same point your throttle linkage reaches wide open throttle against the throttle stop. <u>At no time should the microswitch be enabled before wide open throttle</u>.

3.8 Final Electrical installation Recommendations

☑ At this time, it is advised that you double-check the following areas:

1. **Double-check** all wires so that they do not come in contact with any heat sources such as exhaust manifolds, or EGR crossovers.
2. **Double-check** the wires that lead from the microswitch to ensure they do not interfere with the operation of the throttle linkage.
3. Make sure the relay and the fuse are serviceable and mounted securely.

You are ready to hook up your battery and prepare your vehicle to run.

4.0 Before You Run Your Vehicle Using Your Edelbrock Nitrous System

You have just completed the installation of your Edelbrock Nitrous System. It is time to perform some basic system checks to ensure all of the work you have done is correct and ready to operate properly. The following procedure is designed to validate the operation of your nitrous system before operating your vehicle:

☑ ***Note: Before performing steps 1 thru 4, make sure that the nitrous bottle is closed and main nitrous supply line is empty of any nitrous.***

4.1 Fuel System Check

1. Hook up all battery leads.
2. Double-check all wires and leads for signs of heat and proper connections.
3. Start your vehicle.
4. Inspect fuel rail where Fuel Pressure Safety Switch has been installed for any leaks.

4.2 Nitrous System Check

1. With the vehicle's engine running, slowly open nitrous bottle valve.
   Note: *There should be no change in engine idle speed. If idle speed changes, close nitrous bottle valve immediately and refer to the "Troubleshooting Guide" on pages 19-21.*
2. Inspect nitrous lines and fittings for leaks using a soapy water mixture and a small brush.
3. If any of the fittings/connections show bubbling around the attachment nut or on the threaded area of the fitting, shut the nitrous bottle valve off immediately and dry the fitting before attempting any service to that particular fitting connection.
4. If the engine idle does not come up, and all of the fittings appear to be leak-free, you have successfully completed the installation of you Edelbrock Nitrous System.

5.0 Troubleshooting and Routine Maintenance

How to use our Troubleshooting Flowchart:

The troubleshooting of a nitrous system is basic and straightforward. The symptom chart is divided by symptom, cause and action required. Determine your problem (symptom), identify the potential problem (cause) and correct the problem (action required).

Symptom #1… *Change in engine speed when nitrous bottle valve is opened.*

1. Malfunctioning nitrous solenoid.
    a. Refer to solenoid inspection and repair on page 21.
    b. Repair/replace solenoid.
2. Contamination in nitrous solenoid.
    a. Refer to solenoid inspection and repair on page 21.
    b. Clean/replace solenoid.

Symptom #2… *Engine runs excessively rich when system is activated.*

1. Nitrous bottle valve not fully opened.
    a. Check bottle valve.
    b. Open valve fully.
2. Nitrous bottle mounted improperly.
    a. Mount bottle properly. See manual pages 7-8 for more information.
3. Plugged nitrous filter.
    a. Clean and/or replace nitrous filter.
    b. See nitrous solenoid symptom #1.
4. Low bottle pressure.
    a. Weigh bottle.
        1. Bottle should be 10 lbs. above empty, bottle weight listed on bottle label.
    b. Check bottle temperature.
        1. Maintain 80 to 85 degrees of bottle surface temperature.

Symptom #3… *No change in performance when system is activated.*

1. System wired incorrectly.
    a. Compare wiring to schematic. See page 14.
    b. Wire per instructions.

2. Loose ground wires.
    a. Connect test light to battery "+" (positive) terminal. Check for continuity at grounds.
    b. Tighten/repair loose grounds.

3. No power to arming switch.
    a. With ignition "on", connect test light to battery "–" (negative) terminal. Check for power at pole #1 on arming switch.
    b. Repair wiring as necessary.

4. Malfunctioning arming switch.
    a. With ignition "on", turn arming switch "on." Connect test light to battery "–" (negative) terminal. Check for power at terminal #1 wire on arming switch.
    b. If power is present, replace arming switch.

5. Malfunctioning microswitch.
    a. Turn arming toggle "off". Close throttle microswitch, check for continuity between microswitch wiring terminals.
    b. If continuity is present, replace microswitch.

6. Inadequate nitrous supply.
    a. Weigh bottle.
        1. Bottle should be 10 lbs. above empty bottle weight listed on bottle label when full.
    b. Check bottle pressure.
        1. Maintain 900-950 psi for optimum system performance.
    c. Check bottle temperature.
        1. Maintain 80 to 85 degrees of bottle surface temperature.
    d. Check bottle valve.
        1. Open valve fully.
    e. Check bottle orientation. See page 8.
        1. Mount bottle properly.

7. Mismatched nitrous/vacuum “TEE” jetting.
    a. Compare jetting to recommended values. See page 5.
        1. Install correct jets
    b. Verify the number stamped in the jet.
        1. Acquire the right size jets and install correct jets.

8. Loose nitrous solenoid wiring.
    a. Inspect solenoid wiring. See pages 13-14 for wiring information.
    b. Repair wiring as necessary.

9. Malfunctioning nitrous solenoid.
    a. Inspect solenoid wiring. See pages 13-14 for wiring information.
        1. Repair wiring as necessary.
    b. Inspect solenoid. See symptom # 2.
        1. Rebuild/replace solenoid.

Symptom #4… *Engine detonates mildly when system is activated.*

1. Excessive ignition timing.
    a. Check Timing.
        1. Reduce timing in 2-degree increments for every 50 hp.
2. Inadequate octane fuel.
    a. Verify what gasoline you use.
        1. Use higher-octane fuel.
3. Spark plug heat range too high.
    a. Verify what heat range the spark plug is, and how it functions in a high load, high performance application.
        1. Install a performance spark plug.
        2. Reduce spark plug heat range.
5. Too much nitrous flow.
    a. Verify the size of the nitrous jet.
        1. Install the proper nitrous jet.
    b. Check bottle temperature and pressure.
        1. Ensure before every nitrous usage that you only use nitrous when the temperature and pressure of your bottle are correct.

Symptom #6… *Vehicle surges under acceleration when system is activated.*

1. Inadequate nitrous supply.
    a. Weigh bottle.
        1. Bottle should be 10 lbs. above empty bottle weight listed on bottle label when full.
    b. Check bottle temperature.
        1. Maintain 80 to 85 degrees of bottle surface temperature.
    c. Check bottle valve.
        1. Open valve fully
    d. Check bottle orientation. See pages 7-8.
        1. Mount bottle properly.

Solenoid inspection and maintenance.

1. Close valve on nitrous bottle.
2. Make sure all nitrous and fuel supply lines are free of pressure before removal of any system solenoid.
    a. Empty main nitrous supply line at the nitrous bottle. Take care to not breathe or expose your skin to nitrous.
    b. **Do not** open pressurized fuel lines over a hot engine. Have a fuel safe container ready to catch all fuel that escapes from the fuel line. Avoid breathing fuel vapors and protect your skin from fuel exposure.
3. Remove nitrous/fuel solenoid from the engine and securely clamp it into a vise, taking great care not to damage the solenoid.
4. Remove the solenoid cover, retaining nut from top of the nitrous/fuel solenoid.
5. Remove coil and housing from nitrous/fuel solenoid base.
6. Unscrew stem from nitrous/fuel solenoid base. Do this by using a solenoid stem removal tool or by “double nutting” the stem and unscrewing the stem from the housing body. Do not use pliers on solenoid stem; damage to the stem will result.
7. Remove the stem, spring and plunger from the solenoid base paying close attention to the way they are assembled.
8. Examine the plunger seal for swelling, cuts and abrasions. The seal surface should be flat, except for a small circular indentation in the center of the seal.

    A seal that has been contaminated or over-pressurized will bulge from exposure to chemicals other than fuel or nitrous oxide. It can appear to extend down from the plunger and be dome-shaped. A contaminated seal may return to its original shape if left out in fresh air for approximately 48 hours. It may then be returned to service. If it does not return to its original shape, it must be replaced.
9. Clean the solenoid body. Do not use an oil-based solvent to clean any part of the solenoid. Remove any contaminants that may be present. Make sure solenoid body is clean, dry and free of oils before assembly.
10. Replace the O-Ring, plunger and piston spring.
11. Re-assemble solenoid by reversing disassembly procedure.

This page is left for notes:

Edelbrock Corporation
2700 California Street
Torrance, California 90503
Phone (800) 416-8628